This is partly the fault of the printer, partly of the engraver, and partly of the artist. A judicious weeding out of the bad ones would greatly improve the appearance of the book, and remove the possibility of giving a poor impression at first sight.

We heartily commend the book to the attention of teachers as one likely to prove suitable for class use, and as one which is well up to the times, fresh and vigorous.

NOTES AND NEWS.

DR. N. CONR. KINDBERG describes a new Cinclidotus from Greece, *C. falcatus*, in the *Rev. Bryologique*, No. 3, 1887, p. 43.

DR. P. FALKENBERG has been appointed Professor of Botany and Director of the Botanical Gardens at Rostock, and Dr. August Gravis to the same offices at Lüttich.

MISS EFFIE A. SOUTHWORTH, for some time past instructor at Bryn Mawr College, is now connected with the Section of Vegetable Pathology at Washington, chiefly engaged in microscopical work.

MISS HELEN DE S. ABBOTT, known to our readers by her studies in botanico-chemistry, has been elected a member of the Philosophical Society of Philadelphia, being the sixth woman who has received that honor during the society's six score years of existence.

PROF. F. L. SARGENT has been obliged, on account of failing health, to resign the chair of botany in the University of Wisconsin. His work there is highly spoken of. Prof. C. R. Barnes has been called to the place, and will remove to Madison early in September.

DURING THE ABSENCE in Europe of Prof. W. R. Dudley, of Cornell University, who sailed from New York June 25, his classes and other college duties will be cared for by Mr. F. V. Coville, who has just been graduated from the university with special honors in botany.

GREVILLEA for June has the following note under the heading, "Waste Paper:" "Our readers should look out for another new book which professes to be a 'field book for fungus hunters,' but is really only a hunter for their spare coppers. 'Please pity the poor blind.'"

THE FOURTH PART of Th. Fischer's *Bibliotheca Botanica* is a work by Dr. Herman Vöchting, entitled, "Die Bildung der Knollen." Two other parts are in press, Dr. S. Dietz, on Blüthenentwickelung von Typha und Sparganium, and Dr. Aug. Schenck, on Fossile Pflanzen aus der Elburskette.

THE SECTION OF VEGETABLE PATHOLOGY of the Department of Agriculture, under the management of Prof. Scribner, has established three stations for testing fungicides, especially for the treatment of the diseases of the vine. They are at Fayetteville, N. C., at Charlottesville, Va., and at Vineland, N. J.

THE SOCIÉTÉ MYCOLOGIQUE DE FRANCE has just published the first part of its third volume. It is chiefly devoted to an account of the several meetings of 1886, and also has a paper on edible fungi, with excellent illustrations, partly photographs and partly colored plates, and a paper regarding the Discomycetes in an inedited work by Dunal.

MR. ERWIN F. SMITH, government assistant in the study of plant diseases, has been commissioned to investigate the subject of "peach yellows." It is a very obscure but highly important subject, and Mr. Smith will win laurels in the scientific field and receive applause from the cultivator if he discloses the true nature and action of the disease.

MR. L. H. PAMMEL, of the Shaw School of Botany at St. Louis, has distributed a pamphlet, reprinted from vol. xv of the Trans. Minn. Hort. Soc., on the weeds of Southwest Wisconsin and Southeast Minnesota. An account of the prolificacy, vitality, dissemination and migration of weeds is followed by a list of eighty-eight species, with remarks, a table showing the native country of each, and a list of papers consulted. The species are those of the region of La Crosse.

THE SUMMER INSTITUTE at Martha's Vineyard, which holds a five weeks' session beginning early in July, continues its botanical department under the able management of Mr. Edward S. Burgess, of Washington. The courses are graded to meet the requirements of students of varying proficiency, and the methods are those adopted by the best educators. There is provision for special studies in the fresh and salt water algæ, histology, etc. The department of microscopy, conducted by Rev. J. D. King, also gives attention to vegetable histology and to technics.

THE TEMPERATURE of the stems of plants at the surface of the ground is found by Mr. E. S. Goff (*Agric. Science*, vol. I, p. 134) to be greatly influenced by the depth from which the supply of moisture is mainly drawn. As the temperature of the air and of the surface soil rises toward the hottest part of the day, the temperature of the stem remains depressed in direct ratio to the depth of the chief part of the feeding rootlets. In the beet the temperature of the root at four inches below the surface of the ground was found to be practically the same throughout the day as that of the surrounding soil; but at the surface of the ground the stem, on the hottest day recorded, was ten degrees cooler than the soil. Observations on the cabbage, tomato and corn were specially instructive, as they respectively represent deep, medium and shallow habits of root feeding.

DR. OLIVER WENDELL HOLMES takes an interest in trees, and large ones in particular. In a recent visit to England he measured a Scotch elm at Oxford, in the grounds of Magdalen College, as he tells us in the *Atlantic Monthly*, vol. lix, p. 645, that had a girth of twenty-five feet six inches at the smallest part between the limbs and ground. This he contrasts with New England elms as follows: "I have measured a good many of these. About sixteen feet is the measurement of a large elm, like that on Boston Common, which all middle-aged people remember. From twenty-two to twenty-three feet is the ordinary maximum of the very largest trees. I never found but one exceed it; that was the great Springfield elm, which looks as if it might have been formed by the coalescence from the earliest period of growth of two young trees. When I measured it in 1837 it was twenty-four feet eight inches in circumference at five feet from the ground, growing larger above and below."

DR. F. GRAVET has translated from the Danish into French a paper by C. Jensen on the analogous variations of the Sphagnaceæ. The author points out the fact that the interminable variations of these mosses are reducible to certain form-series under each species which are closely analogous. These forms are traced by the author to their external causes as far as possible. Thus plants growing entirely under water exhibit certain peculiarities, and these variations are so similar under the

different species that they may be grouped as *formæ immersæ*. In like manner *formæ compactæ et strictæ* are attributed to growth in a place more or less dry where they receive the direct rays of the sun; *formæ squarrosulæ*, *falcatæ*, *homophyllæ*, and *tenellæ* are recognized. The author then points out the varieties under each species which may be considered as belonging to the various forms. Mr. Jensen is the first to study the influence of external agents on the formation of the varieties of Sphagna, and his memoir is a very interesting and instructive one. The original appeared in the *Botanisk Tidskrift*, vol. xiii, and the translation in *Revue Bryologique*, vol. xiv (1887), p. 33.

DR. S. SCHÖNLAND, of the University of Oxford, claims to have reached the long-desired process of embedding delicate plant tissues in paraffin so that unshrunken serial sections may be cut by the ribbon method. His process is described essentially as follows in the *Botanisches Centralblatt*, vol. xxx (1887), p. 284: The object should be stained entire in borax-carmine, for which twenty-four hours suffices. Then place it in 30 per cent. alcohol, to which a trace of acetic acid has been added, and then in successively stronger alcohol up to the strongest commercial, which is 92–95 per cent.[1] It is next transferred carefully to a small vial (containing 3–4 cm.) of equal parts of clove oil and strong alcohol. At first it will float, but when it has sunk to the bottom, which often takes some time, it should be transferred to pure clove oil, and after an hour into oil of turpentine, in which it must remain about six hours. Finally it is placed in melted paraffin for 8–10 hours. The paraffin used must have a melting point of about 45° C., and its temperature must never go above 47°. For keeping the temperature constant the well-known thermo-regulator must be used. The embedding is done in the usual manner, using either the paper tray or the L-shaped pieces of metal. It is generally best to raise the temperature of the paraffin somewhat shortly before pouring it into the mold, to prevent the formation of bubbles on cooling. The manipulations for cutting the ribbons of sections with the rocking or sliding microtome are the same as with animal tissues. The sections are fastened to the slide with a mixture of one part of collodion and three parts of clove oil, or a mixture of equal parts of filtered white of egg and glycerine. The first is preferable in case one desires to stain the section on the slide, while the latter is generally reliable when the fixing only is desired. The slide is then put in a warm place for a short time or warmed gently over a flame, then plunged into turpentine or flooded with it to dissolve the paraffin. It is then ready for staining or mounting in the usual way.

Those not familiar with the treatment of animal tissues and the requisites for ribbon section-cutting will find detailed accounts in the manuals on histological technique.[2] The author adds that the results which can be attained are almost incredible. In serial sections of leaves one can, not infrequently, obtain four to six sections through the same stoma and it is easy to get several sections through the apical cell of a fern root, when the embedding is rightly done. It will be observed that this method differs little from well-known zoological methods, but that little probably constitutes the difference between success and failure in the process.

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[1] Schönland used methyl alcohol, the strongest 92 per cent., but ethyl will undoubtedly answer, and is commoner in this country.

[2] Cf. Whitman "Methods of Research, etc.," Cassino, 1885. H. L. Osborn, in Am. Mo. Mic. Jour., May, 1887.